***What is Claimed is:*** CLMS 1-39

1. A peptide no more than 30 amino acids in length, comprising at least 15 contiguous amino acids selected from: GGEDGDYLSDPFYYNHGMD

(a) SEQ ID NO:1, wherein the tyrosine at position 7 must be present; 19 AA 326

(b) SEQ ID NO:2, wherein the tyrosines at positions 2 and 6 must be present; PYPNDYNDYAPEEGMSWY 18 AA 326

(c) SEQ ID NO:3, wherein at least one of the tyrosines at positions 3, 10, 11 or 12 must be present; GDYADY DGGYY T DMD 15 AA 326

(d) SEQ ID NO:4, wherein at least one of the tyrosines at positions 12, 19, 20 or 21 must be present; NSIAG UAAAGDYADY DGGYYYDMD 24 AA 325

(e) SEQ ID NO:5, wherein the tyrosine at position 11 must be present; and DVGPSWDNDD YYD RS GRGV FD 21 AA 326

(f) SEQ ID NO:6, wherein the tyrosine at position 5 must be present. RNPNYDENADYSTVYHYMD 19 AA 326

I

RECOUNT

2. The peptide of claim 1, wherein one or more tyrosines in said peptide are sulfated.

3. A polynucleotide comprising a coding sequence consisting of nucleotides encoding the peptide of claim 1.

II

4. The polynucleotide of claim 3, wherein said polynucleotide is an expression vector, comprising a promoter operably linked to said coding sequence.

5. A host cell transformed with the vector of claim 4.

6. A peptide consisting essentially of the amino acid sequence of SEQ ID NO:1.

III

7. The peptide of claim 6, wherein the tyrosine at position 7 in SEQ ID NO:1 is sulfated.

IV

8. A polynucleotide comprising a coding sequence consisting of nucleotides encoding the peptide of claim 6.

I. 30 AA

II. NA

III ~~Kuk~~, 6, 7 PRP SEQ 1

IV. ~~Btk~~, 8-10 NA SEQ 1

~~III~~.

V 11, 12 AA P SEQ 2

VI 13-15 NA " 2

9. The polynucleotide of claim 8, wherein said polynucleotide is an expression vector comprising a promoter operably linked to said coding sequence.

10. A host cell transformed with the vector of claim 9.

11. A peptide consisting essentially of the amino acid sequence of SEQ ID NO:2.

12. The peptide of claim 11, wherein the tyrosines at positions 2 and 6 in SEQ ID NO:2 are sulfated.

13. A polynucleotide comprising a coding sequence consisting of nucleotides encoding the peptide of claim 6.

14. The polynucleotide of claim 13, wherein said polynucleotide is an expression vector comprising a promoter operably linked to said coding sequence.

15. A host cell transformed with the polynucleotide of claim 13.

16. A peptide consisting essentially of the amino acid sequence of SEQ ID NO:3.

17. The peptide of claim 16, wherein at least one of the tyrosines at positions 3, 10, 11 or 12 of SEQ ID NO:3 are sulfated.

18. A polynucleotide comprising a coding sequence consisting of nucleotides encoding the peptide of claim 16.

19. The polynucleotide of claim 18, wherein said polynucleotide is an expression vector comprising a promoter operably linked to said coding sequence.

20. A host cell transformed with the polynucleotide of claim 19.

21. A peptide consisting essentially of the amino acid sequence of SEQ ID NO:4.

22. The peptide of claim 21, wherein at least one of the tyrosines positions 12, 19, 20 or 21 of SEQ ID NO:4 are sulfated.

23. A polynucleotide comprising a coding sequence consisting of nucleotides encoding the peptide of claim 21.

24. The polynucleotide of claim 23, wherein said polynucleotide is an expression vector comprising a promoter operably linked to said coding sequence.

25. A host cell transformed with the polynucleotide of claim 24.

26. A peptide consisting essentially of the amino acid sequence of SEQ ID NO:5.

27. The peptide of claim 26, wherein the tyrosine at position 11 of SEQ ID NO:5 is sulfated.

28. A polynucleotide comprising a coding sequence consisting of nucleotides encoding the peptide of claim 26.

29. The polynucleotide of claim 28, wherein said polynucleotide is an expression vector comprising a promoter operably linked to said coding sequence.

30. A host cell transformed with the polynucleotide of claim 29.

31. A peptide consisting essentially of the amino acid sequence of SEQ ID NO:6.

32. The peptide of claim 31, wherein the tyrosine at position 5 of SEQ ID NO:6 is sulfated.

33. A polynucleotide comprising a coding sequence consisting of nucleotides encoding the peptide of claim 31.

34. The polynucleotide of claim 33, wherein said polynucleotide is an expression vector comprising a promoter operably linked to said coding sequence.

35. A host cell transformed with the polynucleotide of claim 34.

36. The peptide of any one of claims 1, 2, 6, 7, 11, 12, 16, 17, 21, 22, 26, 27, 31 or 32, wherein said peptide reduces the uptake of an R5 HIV isolate by cultured CCR5-positive immune cells by at least 50% at a concentration of 1 μg/ml.

37. A method of preventing the binding of gp120 to CCR5, comprising contacting said gp120 with the peptide of any one of claims 1, 2, 6, 7, 11, 12, 16, 17, 21, 22, 26, 27, 31 or 32.

38. A method for increasing the affinity of an antibody for its antigen, comprising: sulfating one or more tyrosines present in said antibody.

39. The method of claim 38, wherein said antibody is sulfated *in vivo* in the presence of a sulfotransferase.